AMENDMENTS TO THE CLAIMS

1-18. (canceled)

19. (currently amended) A transgenic cell comprising a polynucleotide molecule which hybridizes under stringent hybridization conditions with a nucleic acid molecule comprising a nucleotide sequence as represented in FIGS. 5a (SEQ ID NO:2), 5b (SEQ ID NO:3), 6a (SEQ ID NO:5), 6c (SEQ ID NO:20), 7a (SEQ ID NO:7), 8a (SEQ ID NO:9), 8b (SEQ ID NO:10), 9a (SEQ ID NO:12), 10a (SEQ ID NO:14), 11a (SEQ ID NO:15), 11b (SEQ ID NO:16), or 11d (SEQ ID NO:18), wherein said polynucleotide molecule encodes a polypeptide which has desaturase activity.

20. (previously presented) The transgenic cell according to claim 19, wherein the cell comprises an expression vector which comprises the polynucleotide molecule and an expression regulatory element operably linked thereto.

21. (previously presented) The transgenic cell according to claim 20, wherein the expression regulatory element is a promoter.

22. (currently amended) The cell according to claim 19, wherein the polynucleotide molecule comprises the nucleic acid sequence as represented in FIGS. 5a (SEQ ID NO:2), 5b (SEQ ID NO:3), 6a (SEQ ID NO:5), 6c (SEQ ID NO:20), 7a (SEQ ID NO:7), 8a (SEQ ID NO:9), 8b (SEQ ID NO:10), 9a (SEQ ID NO:12), 10a (SEQ ID NO:14), 11a (SEQ ID NO:15), 11b (SEQ ID NO:16), or 11d (SEQ ID NO:18).

23. (previously presented) The cell according to any of claim 19, wherein the cell over-expresses the polypeptide which has desaturase activity.

24. (currently amended) The cell according to claim 19, wherein the nucleotide sequence is as represented by FIG. 10a (SEQ ID NO:14), and wherein said polypeptide has .DELTA.11-desaturase activity.

25. (currently amended) The cell according to claim 19, wherein the nucleotide sequence is as represented by FIG. 8a (SEQ ID NO:9), and wherein the polypeptide has .DELTA.6-desaturase activity.

26. (previously presented) The cell according to claim 19, wherein the transgenic cell is a eukaryotic cell.

27. (previously presented) The cell according to claim 26, wherein the cell is a plant cell.

28. (previously presented) A plant comprising a cell according to claim 27.

29. (previously presented) The plant according to claim 28, wherein the plant is an oil seed plant.

30. (previously presented) A seed comprising a cell according to claim 27.

31. (previously presented) The seed according to claim 30, wherein the seed is an oil plant seed.

32. (previously presented) The cell according to claim 19, wherein the cell is a prokaryotic cell.

33. (currently amended) A reaction vessel comprising at least one polypeptide encoded by a polynucleotide molecule which hybridizes under stringent hybridization conditions with a nucleic acid molecule comprising a nucleotide sequence as represented in FIGS. 5a (SEQ ID NO:2), 5b (SEQ ID NO:3), 6a (SEQ ID NO:5), 6c (SEQ ID NO:20), 7a (SEQ ID NO:7), 8a (SEQ ID NO:9), 8b (SEQ ID NO:10), 9a (SEQ ID NO:12), 10a (SEQ ID NO:14), 11a (SEQ ID NO:15), 11b (SEQ ID NO:16), or 11d (SEQ ID NO:18), wherein said polynucleotide molecule encodes a polypeptide which has desaturase activity, at least one fatty acid substrate, and suitable co-factors, wherein said vessel is adapted for desaturation of the at least one fatty acid substrate.

34. (previously presented) The vessel according to claim 33 wherein the vessel comprises a transgenic cell comprising an expression vector which comprises the polynucleotide molecule.

35. (previously presented) The vessel according to claim 34, wherein the cell is a yeast cell.

36. (previously presented) The vessel according to claim 34, wherein the cell is a prokaryotic cell.

37. (previously presented) A method to desaturate a fatty acid substrate comprising the steps of: i) providing a reaction vessel according to claim 33; and ii) culturing the cell contained in the reaction vessel under conditions which allow desaturation of at least one fatty acid substrate.

38. (currently amended) A transgenic cell according to claim 19, wherein the transgenic cell comprises a polynucleotide molecule which encodes a polypeptide molecule comprising an amino acid sequence as represented in FIGS. 1c (SEQ ID NO:1), 5c (SEQ ID NO:4), 6b (SEQ ID NO:6), 6d (SEQ ID NO:21), 7b (SEQ ID NO:8), 8c (SEQ ID NO:11), 9b (SEQ ID NO:13), 11c (SEQ ID NO:17) or 11e (SEQ ID NO:19).

39. (currently amended) A transgenic cell comprising a polynucleotide molecule which encodes a polypeptide molecule, wherein the polypeptide molecule comprises an amino acid sequence having at least 95% sequence identity to an amino acid sequence shown in FIG. 1c (SEQ ID NO:1), and wherein the polypeptide has desaturase activity.

40. (currently amended) The transgenic cell according to claim 39, wherein the polypeptide molecule comprises an amino acid sequence having at least 99% sequence identity to an amino acid sequence shown in FIG. 1c (SEQ ID NO:1).

41. (currently amended) The transgenic cell according to claim 40, wherein the polypeptide molecule comprises an amino acid sequence shown in FIG. 1c (SEQ ID NO:1).